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Ciliary signalling in cancer

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Abstract

 Although tumours initiate from oncogenic changes in a cancer cell, subsequent tumour progression and therapeutic response depend on interactions between the cancer cells and the tumour microenvironment (TME). The primary monocilium, or cilium, provides a spatially localized platform for signalling by Hedgehog, Notch, WNT and some receptor tyrosine kinase pathways and mechanosensation. Changes in ciliation of cancer cells and/or cells of the TME during tumour development enforce asymmetric intercellular signalling in the TME. Growing evidence indicates that some oncogenic signalling pathways as well as some targeted anticancer therapies induce ciliation, while others repress it. The links between the genomic profile of cancer cells, drug treatment and ciliary signalling in the TME likely affect tumour growth and therapeutic response.

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